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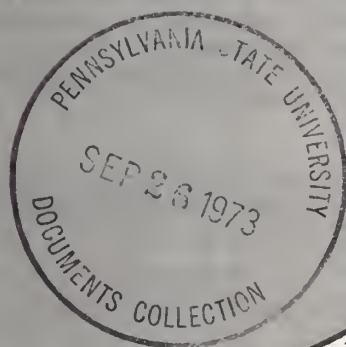


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1970 Census Geography: Concepts, Products, and Programs



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BUREAU OF
THE CENSUS



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1970 Census Geography: Concepts, Products, and Programs

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INTRODUCTION

The objective of this Data Access Description is to explain the geographic aspects of the 1970 census. Special emphasis will be given to the census geographic products which assist users in their analysis of small-area data.

Geography played a crucial role in every stage of planning, enumerating, and tabulating the 1970 Census of Population and Housing. Identification of geographic areas was the basis for administrative control in taking the 1970 census and processing the returned questionnaires. Census tabulations were prepared for specific geographic areas-- whether the entire United States or a city block. Without the ability to assign or relate data to specific areas, the data collected from a census would be of little value other than for furnishing national totals. Statistics which present characteristics for States, counties, cities, and smaller areas make the censuses important to most data users.

The geographic work for a census basically involves determining boundaries, coding geographic areas, and preparing maps. However, additional geographic work was required for the

1970 census in the development of mailing lists of residential addresses for the metropolitan areas which were enumerated by mail rather than by census takers. Work relating to geography resulted in several products, such as new types of census maps, geographic code schemes, and address coding guides, which are of value to census data users as well as the Bureau of the Census.

1970 CENSUS GEOGRAPHIC AREAS

In the 1970 census substantial improvements have been made in providing tabulations for small geographic areas. Although there is no precise definition of "small areas," for the purpose of this Data Access Description geographic areas at the State level and below are considered "small-areas." (Examples include standard metropolitan statistical areas (SMSA's), counties, cities, census tracts, and blocks.) Small-area census data are used by the Federal government in the development of national policies. State and local governments use small-area census data for planning and implementing many of their programs. Semipublic agencies, university faculties, and the business community also are interested in small-area census data.

Boundaries of the geographic areas for which the Bureau of the Census collected and tabulated 1970 census data were established in several ways. Boundaries of political areas--States, congressional districts, counties, minor civil divisions, incorporated places, and city wards--are based on information received from the appropriate authorities. Boundaries of statistical areas are determined by groups with special interests, often with the advice and assistance of the Bureau of the Census. For example, the Office of Management and Budget of the Executive Office of the President, with the assistance of other Federal agencies, defines standard metropolitan statistical areas. Boundaries of functional or administrative areas are defined outside the Census Bureau by the appropriate agency, such as the ZIP code areas defined by the U.S. Postal Service. In addition, the Bureau of the Census established the boundaries of several sets of geographic areas for which it tabulated 1970 census data--urbanized areas, census county divisions, unincorporated places, census tracts (in cooperation with local census tract committees), enumeration districts, block groups, and blocks. Census county divisions and unincorporated

places are defined with local assistance at several levels of government.

To meet the processing and tabulation requirements of the 1970 census, numeric codes were used in lieu of names to identify areas for which census data were summarized. The geographic codes were derived primarily from a master coding scheme prepared by the Bureau, and they appear on the 1970 census summary tapes and related geographic products. Each level in the census geographic hierarchy, from the State down to the block, has an associated code scheme, with individual codes ranging in length from one to six digits.

In appendix A, definitions are presented for the key geographic areas for which 1970 census data are tabulated. The definitions specify the unique characteristics of the geographic area, the number of units of each type of area (example: 50 States, 3,141 counties), and the type of geographic code used to identify the area (example: minor civil divisions are assigned a 3-digit numeric code according to their alphabetic sequence within county). Figure 1 shows how most of the geographic areas relate to each other (e.g., census tracts are subdivisions of standard metropolitan statistical areas).

Data from the 1970 census have been tabulated for all of the geographic areas described in appendix A and are available in several different series of summary computer tapes and many printed reports derived from the tapes. It may be difficult for a user to determine where data for a given geographic area can be found. Figure 2 is designed to help reduce this problem by showing the geographic areas associated with each of the summary tape series and printed reports and microfilm derived from the tapes. For example, a user interested in data for census blocks can see that this information will be found on the Third Count Summary Tape and in the printed report series HC(3). General information on the summary tapes and printed reports can be found in *Data Access Descriptions* Nos. 18 and 27, respectively, which are available on request from the Data User Services Office, Bureau of the Census, Washington, D.C. 20233.

GEOGRAPHIC REFERENCE PRODUCTS

A number of geographic reference products have emerged from the 1970 census. These products are essential to the effective use of small-area data. For example, census maps show the boundaries of each census tract, enumeration district, and block. Geographic code schemes are required to permit identification of

census geographic areas contained on the summary tapes. Address coding guides and geographic base (DIME) files provide a means of relating local data to census geographic areas. (DIME is an acronym for Dual Independent Map Encoding.) Descriptions of the various geographic reference products are presented below.

Census Maps

Census maps are necessary for virtually all uses of small-area census data; they are needed in locating specific census geographic areas and in analyzing their areal relationships. There are basically five kinds of census maps which delineate small areas: The Metropolitan Map Series, county maps, place maps, county subdivision maps, and tract outline maps.

The Metropolitan Map Series (MMS) generally covers the urbanized areas of standard metropolitan statistical areas and shows, in great detail, the location of place and MCD/CCD boundaries, census tracts, congressional districts, enumeration districts, and blocks, and identifies the features which form the boundaries of these areas. These maps are at a common scale of 1 inch = 2,000 feet, with portions of some sheets enlarged to 1 inch = 800 feet. There are approximately 200 map sets in the series (one or more urbanized areas may be in a map set) comprising approximately 3,200 map sheets (each sheet including an area of 5 by 7 miles); the number of sheets in a set range from 2 to 144. The Metropolitan Map Series covers a total area of approximately 110,000 square miles. This coverage includes about two-thirds of the Nation's population. The series is available as part of the *Block Statistics* reports for urbanized areas, series HC(3) of the 1970 census reports. Each report is accompanied by a set of metropolitan maps for the urbanized area concerned. An HC(3) report for a medium-size urbanized area can be purchased for less than \$5 from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402. The metropolitan maps contained in the HC(3) reports use color and shading to emphasize selected boundaries.

The county maps, which generally are reproductions of standard State highway department maps, show the boundaries of minor civil divisions or census county divisions, places, tracts, and enumeration districts for portions of counties not covered by the Metropolitan Map Series, as well as for all counties outside of SMSA's. It is important to note that the county maps show only a range of enumeration district (ED) numbers for places which contain more than one ED and do not identify the ED boundaries

within places--place maps are used for this purpose. County maps are generally at a scale of 1 inch = 2 miles. There are usually one or two map sheets for each county except for those counties larger in area. County maps are not published in any census reports. Copies may be obtained at a price of \$1 and up for each sheet from the Data User Services Office, Bureau of the Census, Washington, D.C. 20233.

Place maps are available for every incorporated and unincorporated place which was reported in the 1970 census but not included in the Metropolitan Map Series. These maps, which are usually reproductions of maps supplied to the Bureau of the Census by local agencies, identify streets and show boundaries for enumeration districts, tracts where applicable, and blocks if the place was under contract with the Bureau for preparation of block statistics. Place maps generally vary in scale from 1 inch = 400 feet to 1 inch = 1,500 feet. There is normally one map sheet for each place. Most place maps are not a part of any census report. They are sold individually by the Data User Services Office at a price of \$1.50 and up per map sheet, depending upon the size of the sheet. Place maps appear in the HC(3) reports for places participating in the contract block statistics program; however, these maps do not show ED's.

County subdivision maps of States show boundaries for counties and subdivisions of counties (minor civil divisions or census county divisions) as well as the location of all places which were recognized in the 1970 census. There is normally one map sheet for each State with the exception of a few States that have been combined on one sheet. The scale used for most of the county subdivision maps is 1 inch = 12 miles. The maps are priced at 20 cents per State and may be obtained from the U.S. Government Printing Office. Copies of the county subdivision maps on a smaller scale appear in sectionalized form in *Number of Inhabitants*, series PC(1)-A, of the 1970 census reports.

Tract outline maps show the boundaries of census tracts, counties, and all places with populations of 25,000 or more. Names of features which constitute tract boundaries are included on these maps except for very short segments. The scale of tract outline maps varies according to the size and complexity of the SMSA and, therefore, may range from 1 inch = 1/2 mile to 1 inch = 10 miles. Generally, there are two tract outline map sheets per SMSA. These maps are included as part of the *Census Tract* reports for SMSA's, series PHC(1) of the 1970 census reports. Most PHC(1) re-

ports cost less than \$2 and are available from the U.S. Government Printing Office.

In addition to the census maps already described in this section, there are two other kinds of maps published by the Bureau of the Census. These are the urbanized area maps and the United States Maps.

Urbanized area maps show the extent and components of the urbanized area by means of shading. Copies of these maps, at a scale of 1 inch = 4 miles, appear in *Number of Inhabitants*, series PC(1)-A, and in *General Housing Characteristics*, series HC(1)-A, reports, which can be obtained from the U.S. Government Printing Office. These maps can only be obtained by purchasing the reports. More detailed information on urbanized area boundaries can be found in the Metropolitan Map Series.

The United States Maps (the GE-50 map series) are statistical maps which show the geographic distribution, by county, of various social and economic data from the 1970 census as well as earlier censuses. Different color schemes are used to depict values of the data; county names and boundaries are easily seen through the color. Each map is a single sheet (generally 42" x 30" in size) at an approximate scale of 1 inch = 80 miles. Copies of these maps sell for 25 to 50 cents each. An order form listing the various maps in the GE-50 series is available upon request from the Publications Distribution Section, Social and Economic Statistics Administration, Washington, D.C. 20233.

To facilitate map acquisition, the Bureau of the Census has compiled an inventory of the Metropolitan Map Series, county maps, and place maps. The census map inventory lists the cost and the required number of map sheets for each State, county, and place for maps maintained and sold by the Bureau. Names and the relevant geographic codes for these areas are included. The inventory covers all 50 States and the District of Columbia. By checking the census map inventory for any State, county, or place, a person can quickly determine the required map sheets and their cost. The inventory is most useful when ordering place maps and county maps containing enumeration district and other census boundary designations that are not found in any 1970 census reports.

The U.S. Department of Commerce district offices and the Census Bureau and its regional Data Collection Centers have the census map inventory for the entire Nation on hand to assist users. The inventory can be purchased at a price of \$2 for individual States and \$75 for the complete set from the Data User Services Office.

Figure 1.—Census Geographic Areas

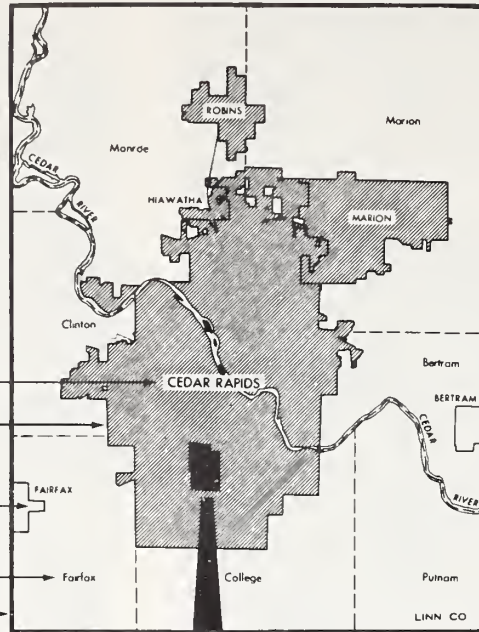
AREA

STANDARD METROPOLITAN
STATISTICAL AREA AND
COMPONENT AREAS
(central city of 50,000+ population
and the surrounding metropolitan
county(s))

POPULATION SIZE

At least 50,000

Central City
Urbanized Area
(shaded area)
Place
Minor Civil Division
County



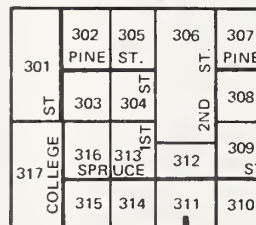
CENSUS TRACT (small, homogeneous,
relatively permanent area; all SMSA's
are entirely tracted)

Average 4,000



BLOCK GROUP OR ENUMERATION
DISTRICT (subdivisions of census tracts,
places, and minor civil divisions)

Average 1,000



BLOCK (identified in all urbanized areas
and some selected areas)

Average 100

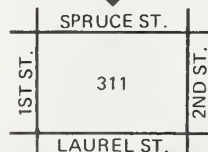


Figure 2.—Geographic Areas Summarized in 1970 Census Data Products

Geographic area	First count				Second count				Third count		Fourth count				Fifth count		Sixth count		
	Summary tape	Microfilm	PC(1)-A ¹	HC(VI)- ¹	Summary tape	PC(1)-B ¹	HC(1)-A ¹	PHC(1)- ¹	Summary tape	HC(3)- ¹	Summary tape ²	PC(1)-C ¹	HC(1)-B ¹	PHC(1)- ¹	Summary tape ³	Microfilm ³	Summary tape ²	PC(1)-D ¹	HC(2)- ¹
Blocks.....									x	x									
Enumeration districts or blockgroups.....	⁴ A	x																	
Census tracts.....					⁴ A			x	(⁵)		⁴ A			x					
Minor civil divisions or census county divisions.	B	x	x		B	x					B				x	x			
All places ⁶	B	x	x																
Places > 1,000 only ⁶					B	x	x												
Places > 2,500 only ⁶ ...													x						
Places > 10,000 only ⁶ ..				x															
Counties.....	B	x	x	x	B	x	x				C	x				x	⁷ x		
Urban/rural parts of counties.....			x		B	x													
Standard metropolitan statistical areas.....	B	x		x	B	x	x	x			C	x						x	x
Urbanized areas of SMSA's	B	x			B	x	x				C	x	x						
Components of SMSA's.....					B			x			C						⁷ x	x	x
Congressional districts..	B	x																	
State.....	B	x	x	x	B	x	x				C	x	x				x	x	
ZIP codes.....															x				

¹Titles of these reports are contained in Data Access Description No. 27.

²On the 4th and 6th Counts, population and housing data appear on separate files.

³Tabulations appearing in the 5th Count (ZIP code summaries) also have been prepared for enumeration districts, block groups, MCD's/CCD's, and counties.

⁴The 1st, 2nd, and 4th Counts have files designated A and B or A, B, and C.

⁵Tract totals appear for only that part of the tract which is covered by block summaries.

⁶Places include all incorporated places and unincorporated places of 5,000 or more in urbanized areas or of 1,000 or more elsewhere.

⁷Sixth Count tapes provide data for metropolitan counties, central cities, and other cities over 50,000 population. Sixth Count housing files also present data for nonmetropolitan counties of 50,000+.

Users who submit frequent census map orders or copy and distribute large quantities of these maps will find the inventory to be of value.

Geographic Code Schemes

All geographic areas are identified on the 1970 census computer tapes only by their numeric codes--names are not used. Users, therefore, require some form of a geographic code scheme to associate the codes for geographic areas with their area names. Codes and the corresponding names for census geographic areas are contained in the following Census Bureau products: The Master Enumeration District List (MEDList), the Geographic Area Code Index (GACI), and the Geographic Identification Code Scheme (GICS).

The Master Enumeration District List, or MEDList, is a listing of the names of political and statistical subdivisions and related geographic codes from the State down to the county subdivision and place level. It also provides codes for unnamed areas below the county subdivision level--tracts, enumeration districts (ED's), and block groups--as well as population and housing total counts for most areas. (See figure 3 for an example of the MEDList.) The MEDList is designed to serve two basic purposes: (1) Furnish area and place names corresponding to the geographic codes which are used on the 1970 census summary tapes and (2) provide official population and housing unit counts for enumeration districts, block groups, and other areas.

A special version of the MEDList containing the latitude and longitude coordinates for the estimated population center points for each of 242,000 enumeration districts and block groups has also been prepared by the Bureau of the Census. The center points, or centroids, were visually estimated from census maps. Coordinate values were then assigned to the points by an electronic digitizer. The coordinates are expressed in decimal degrees carried to four places. The MEDList without coordinates is available for the United States on three reels of tape for \$210; the MEDList with coordinates is sold on a State-by-State basis (one tape reel for each State) at a cost of \$70 per reel. Both products are available from the Data User Services Office, Bureau of the Census.

An abbreviated version of the MEDList, called the Geographic Area Code Index (GACI), is a source of names and related geographic codes for States, counties, places, and county subdivisions (MCD's/CCD's). No area smaller than the county subdivision and place is referenced in the GACI. Population and housing unit counts do

not appear. The GACI is useful for persons not requiring all of the information included in the MEDList. The GACI for the entire United States is available from the Data User Services Office on one reel of tape for \$70 or on one reel of microfilm for \$8.

The 1970 Geographic Identification Code Scheme (GICS) is a four-volume guide to the geographic codes for the component parts (county subdivision and larger areas) of each State. Each volume reports on a different region of the country (Northeast, North Central, South, and West). The information published in the GICS is also available from the MEDList and GACI computer tapes. For each State within a region the GICS presents two tables. Table 1, arranged by counties within the State, shows the following codes, as appropriate, for counties, county subdivisions, and places: State, county, SMSA, MCD or CCD, place, place description, and place size. Table 2 presents alphabetically all the places within the State with their corresponding county, county subdivision, and place codes. A third table, shown once for each volume, presents SMSA and urbanized area codes for the entire United States. (See figure 4 for illustration of tables.) Copies of the GICS may be purchased from the U.S. Government Printing Office for the following prices: Northeast, \$1; North Central, \$1.75; South, \$1.50; and West, 60 cents.

Some of the codes included in the MEDList, GACI, and GICS are codes that have been standardized for use by all Federal agencies in the exchange of computer-readable information. The Federal standard codes in the Bureau products noted above include State, SMSA, county, and congressional district. (The Bureau of the Census includes this last code only in the MEDList). These codes are published by the National Bureau of Standards, U.S. Department of Commerce, in a series known as the Federal Information Processing Standards Publications (FIPS PUB) and are sold by the U.S. Government Printing Office. The titles and prices for these reports are:

FIPS PUB 5-1	State Codes	20 cents
FIPS PUB 6-1	County Codes	45 cents
FIPS PUB 8-2	SMSA Codes	30 cents
FIPS PUB 9	Congressional District Codes	10 cents

For some users, the FIPS PUB series might be more suitable as a source of geographic codes than the Census Bureau's geographic code schemes, especially if a user is interested in only one set of codes (such as codes for all counties in the Nation) rather than several sets of codes for each State and its component parts (SMSA, minor civil division, and place).

Figure 3.—MASTER ENUMERATION DISTRICT LIST (MEDList)

Michigan		Figure C. MASTER ENUMERATION DISTRICT LIST (MCDLIST)																							Frame No. 001					
State	Fed. Std. County	County of tab.	CCC	MCD/CCD	Place			SCA	SMSA	Urbanized area	Tracted area	Univ. area		SEA	ESR	CBD	Area name	Tract		Blk. grp.	ED		Urb./rural	Ward	Cong. dist.	1970 counts				
					Code	Desc.	Size					Prefix	Code					Basic	Suffix		Code	Suffix				Housing	Pop.			
1970	1960	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)	(25)	(26)	(27)	(28)	(29)
26	34	121		1													MUSKEGON											49831	149493	
26	34	121		1	090												Ravenna TWP												650	2102
26	34	121		1	090	2275	4	02		5320		5320	5320	1	34062	06	050	1	Ravenna Village	0029				0442		1	09	09	250	801
26	34	121		1	090		7			5320		5320	5320	1	34062	06	050	1	Remainder of MCD (or CCD)	0029				0443		1	09	09	400	1301
26	34	121		1	095												Roosevelt Park City												633	2578
26	34	121		1	095	2345	4	06		5320	5320	5320	5320	1	34062	06	050	1	Roosevelt Park City	0022			1		0	09	09	200	885	
																		1					2		0	09	09	312	1175	
																		1					3		0	09	09	121	518	
26	34	121		1	110		7			5320			5320	5320	1	34062	06	050	1	White Hall TWP									581	1930
																		1		0030				0404		1	09	09	30	90
																		1		0036				0405		1	09	09	40	125
																		1		0037				0406		1	09	09	72	150
																		1		0038				0407		1	09	09	60	130
																		1		0040						0	09	09	165	625
																		1					2			0	09	09	214	810

Note: Explanation of column heading abbreviations: Federal Standard County; County of Tabulation; Central County Code (CCC); Minor Civil Division (MCD)/Census County Division (CCD); Place Description; Standard Consolidated Area (SCA); Standard Metropolitan Statistical Area (SMSA); Universal Area Code; State Economic

Area (SEA); Economic Sub-Region (ESR); Central Business District (CBD); Block Group; Enumeration District (ED); Urban/Rural; Congressional District.

Figure 4.—Illustrations of 1970 Geographic Identification Code Scheme (GICS) Tables

TABLE 1. COUNTIES, COUNTY SUBDIVISIONS AND PLACES

UTAH

GEOGRAPHIC CODES									NAME	GEOGRAPHIC CODES									NAME
STATE	COUNTY	SMSA	ESR	SEA	MCD	PLACE	PLACE DESC.	PLACE SIZE		STATE	COUNTY	SMSA	ESR	SEA	MCD	PLACE	PLACE DESC.	PLACE SIZE	
49	001		113	03					BEAVER	49	013		113	03	010	0185	4	03	DUCHESNE
49	001		113	03	005				BEAVER DIV	49	013		113	03	015				MYTON DIV
49	001		113	03	010	0050	4	03	BEAVER	49	013		113	03	015	0645	4	01	MYTON
49	001		113	03	010	0590	4	03	MILFORD-MINERSVILLE DIV	49	013		113	03	020				ROOSEVELT DIV
49	001		113	03	010	0600	4	01	MILFORD	49	013		113	03	025	0840	4	05	ROOSEVELT (PART)
49	001		113	03	010	0600	4	01	MINERSVILLE	49	013		113	03	025	0985	4	00	TABIONA DIV
49	003		112	01					BOX ELDER	49	015		113	03					TABIONA
49	003		112	01	005				BEAR RIVER DIV	49	015		113	03	005				EMERY
49	003		112	01	005	0045	4	01	BEAR RIVER	49	015		113	03	005	0090	4	02	CASTLE DALE-HUNTINGTON DIV
49	003		112	01	005	0160	4	01	CORINNE	49	015		113	03	005	0140	4	01	CASTLE DALE
49	003		112	01	005	0210	4	01	ELWOOD	49	015		113	03	005	0200	4	00	CLEVELAND
49	003		112	01	005	0260	4	01	FIELDING	49	015		113	03	005	0360	4	00	ELMO
49	003		112	01	005	0295	4	03	GARLAND	49	015		113	03	005	0385	4	02	HIAWATHA (PART)
49	003		112	01	005	1005	4	06	TREMONTON	49	015		113	03	005	0710	4	02	HUNTINGTON
49	003		112	01	010				BENCLAND DIV	49	015		113	03	010				ORANGEVILLE
49	003		112	01	010	0175	4	01	DEWEYVILLE	49	015		113	03	010	0215	4	01	HUNTINGTON
49	003		112	01	010	0375	4	02	HONEYVILLE	49	015		113	03	010	0255	4	02	EMERY-FERRON DIV
49	003		112	01	015				BRIGHAM CITY DIV	49	015		113	03	015				EMERY
49	003		112	01	015	0080	4	08	BRIGHAM CITY	49	015		113	03	015	0325	4	03	FERRON
																			GREEN RIVER DIV
																			GREEN RIVER (PART)

TABLE 2. ALPHABETIC LIST OF PLACE NAMES

UTAH

GEOGRAPHIC CODES				NAME	GEOGRAPHIC CODES				NAME
COUNTY	MCD	PLACE			COUNTY	MCD	PLACE		
049	006	0005	ALPINE		053	015	0410	IVINS	
013	005	0010	ALTAMONT		041	010	0415	JOSEPH	
025	010	0015	ALTON		031	005	0420	JUNCTION	
005	020	0020	AMALGA		043	010	0425	KAMAS	
049	006	0025	AMERICAN FORK		025	005	0430	KANAB	
041	015	0030	ANABELLA		021	010	0435	KANARRAVILLE	
017	020	0035	ANTIMONY		027	010	0440	KANOSH	
041	020	0040	AURORA		011	005	0445	KAYSVILLE	
003	005	0045	BEAR RIVER		035	035	0450	KEARNS (U)	
001	005	0050	BEAVER		031	005	0460	KINGSTON	
055	010	0055	BICKNELL		041	005	0465	KODSHAREM	
005	005	0060	BINGHAM CANYON		033	005	0470	LAKETOWN	
037	005	0065	BLANDING		053	010	0475	LA VERKIN	
017	005	0072	BOULDER		011	005	0480	LAYTON	
011	010	0075	BOUNTIFUL		027	005	0485	LEAMINGTON	
003	015	0080	BRIGHAM CITY		053	010	0490	LEEDS	
017	020	0085	CANNONVILLE		049	015	0495	LEHI	
015	005	0090	CASTLE DALE		023	010	0500	LEVAN	
007	005	0095	CASTLE GATE		005	010	0505	LEWISTON	
021	010	0100	CLARK		042	006	0510	LEWISTON	

TABLE 3. STANDARD METROPOLITAN STATISTICAL AREAS AND URBANIZED AREAS

GEOGRAPHIC CODES			NAME	GEOGRAPHIC CODES			NAME
SMSA	UA			SMSA	UA		
0040	0040	ABILENE, TEX.		2920		GALVESTON-TEXAS CITY, TEX.	
0080	0080	AKRON, OHIO		2960		GARY-HAMMOND-EAST CHICAGO, IND.	
0120	0120	ALBANY, GA.		3000	3000	GRAND RAPIDS, MICH.	
0160	0160	ALBANY-SCHENECTADY-TROY, N.Y.		3040	3040	GREAT FALLS, MONT.	
0200	0200	ALBUQUERQUE, N.MEX.		3080	3080	GREEN BAY, WIS.	
0240	0240	ALLENTOWN-BETHLEHEM-EASTON, PA.-N.J.			3119	GREENSBORO, N.C.	
0280	0280	ALTOONA, PA.		3120		GREENSBORO-WINSTON-SALEM-HIGH POINT, N.C.	
0320	0320	AMARILLO, TEX.		3160	3160	GREENVILLE, S.C.	
0360		ANAHEIM-SANTA ANA-GARDEN GROVE, CALIF.		3199		HAMILTON, OHIO	
0400	0400	ANDERSON, IND.		3200		HAMILTON-MIDDLETOWN, OHIO	
0440	0440	ANN ARBOR, MICH.			3230	HARLINGEN-SAN BENITO, TEX.	
0460	0459	APPLETON, WIS.		3240	3240	HARRISBURG, PA.	
0480	0480	APPLETON-OSHKOSH, WIS.		3280	3280	HARTFORD, CONN.	
0520	0520	ASHEVILLE, N.C.		3300	3300	HIGH POINT, N.C.	
		ATLANTA, GA.		3320	3320	HONOLULU, HAWAII	
0560	0560	ATLANTIC CITY, N.J.		3360	3360	HOUSTON, TEX.	
0600	0600	AUGUSTA, GA.-S.C.		3400	3400	HUNTINGTON-ASHLAND, W.VA.-KY.-OHIO	
	0620	AURORA, ILL.		3440	3440	HUNTSVILLE, ALA.	
		AUSTIN, TEX.		3480	3480	INDIANAPOLIS, IND.	

Address Coding Guides

In conducting the 1970 Census of Population and Housing, two different enumeration methods were used: the mail-out/mail-back type of canvass, taken primarily in the large urban areas of the country, and the conventional house-to-house visit by enumerators in the remainder of the country.

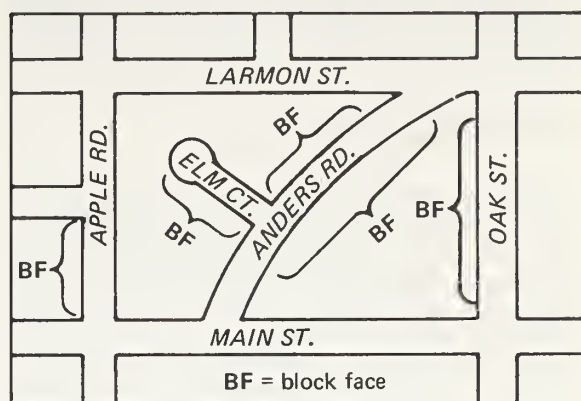
In 145 of the then 233 standard metropolitan statistical areas and in certain adjoining areas the mail-out/mail-back procedure was used. Approximately 60 percent of the Nation's population were canvassed by mail rather than by an enumerator's visit. Householders were asked to complete the census questionnaire in the privacy of their own home and mail it back to a local Census Bureau office. The remainder of the country was enumerated by the conventional house-to-house canvassing procedure which closely resembled enumeration methods of the 1960 and earlier censuses. Census takers visited every housing unit in their assigned ED's and obtained the required information asked on the questionnaires. Census geographic codes for each household were determined and coded on the questionnaire by the enumerator.

In the 145 SMSA's in which the mail-out/mail-back technique was used, a method of assigning specific census geographic codes to a mailing list address was needed. The solution decided upon called for the development of a master computer file for each area which would contain the information necessary to "geocode" the addresses. The file developed for this purpose was named the Address Coding Guide (ACG). The ACG, in essence, performed one of the functions of an enumerator by providing the "census geography" of each address.

Address Coding Guides are simply computer listings which contain block face records for all streets within the city postal delivery area (which roughly corresponds to the urbanized area) of an SMSA. A block face is one side of a street between two intersections; a block face for a dead-end street is one side of a street from its beginning intersection to the dead end. Other features such as municipal boundaries, rivers, and railroad tracks are not included since there were no housing addresses for units associated with them. Figure 5 illustrates some typical block faces. Each ACG record identifies a single block face by street name, a range of addresses, the block number, and tract, place, and other geographic codes.

Census data users have found the Address Coding Guide valuable as a reference source for

Figure 5.—Typical Block Faces



assigning census geographic codes to local records containing addresses. This geographic coding can be performed by using an address matching program (such as the Census Bureau's ADMATCH program described on page 12) which matches individual addresses contained in local record files to address ranges in the ACG. Once a local record has been linked to its appropriate ACG record, all desired census geographic codes are then assigned to the local record file. (This operation represents computerization of the manual process of looking up geographic codes in a printed street index and posting appropriate codes to records, application forms, etc.) For example, crime incidence records may be coded to census tracts, which would permit a correlation study between crime and census socioeconomic data for tracts. The ADMATCH program would match each individual address of crime occurrence to the appropriate address range in the ACG and, upon a match, assign the desired census tract code contained in the ACG to the crime incidence record.

The ACG can be used in the assignment of codes other than census geographic codes. If local areas (i.e., police precincts, planning districts, neighborhoods) are defined in terms of blocks and/or tracts, codes for these local areas can be added to the ACG. (The addition of any local area codes to the ACG is the responsibility of local users.) The ADMATCH program will assign the local area codes to records containing addresses in the same manner that it assigns census geographic codes.

Address Coding Guides are available on computer tape (IBM-compatible format) at \$70 per tape reel from the Data User Services Office, Bureau of the Census. Most areas covered by the ACG are on one or two reels. The ACG's are also available as computer printed listings

on 11- by 14-inch paper. No pricing has been established for the printout version; however, the cost is normally two to three times that for tape versions.

Geographic Base (DIME) Files

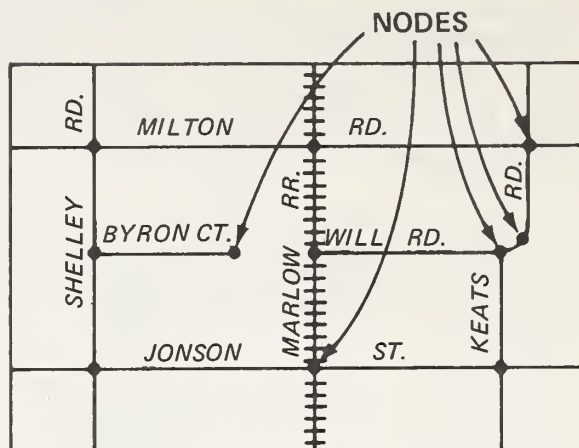
After preparation of the Address Coding Guides was well underway (and the 1970 census date was too near to permit a change in the system), an improved version of the ACG was developed. The improved ACG, which is known as a geographic base file, was developed by the Census Use Study (a small area data research group in the Census Bureau) using a technique called Dual Independent Map Encoding or DIME. The geographic base (DIME) file, commonly referred to as GBF/DIME, is characterized by: (1) An editing capability which improves the accuracy of the files and (2) an increased utility to local users as a result of added features.

The concept underlying the creation of the GBF/DIME files is derived from graph theory. Each street, river, railroad tract, municipal boundary, etc., that bounds a census block can be considered as one or more straight line segments; curved streets or other features can be divided into series of straight line segments. Where streets or other features intersect or change direction, node points are identified. Figure 6 illustrates street segments and nodes. While an Address Coding Guide is constructed on a block face basis, a GBF/DIME file is constructed on a street segment basis. Therefore, while each ACG record contains the appropriate census geographic codes for one side of a street between two intersections, each GBF/DIME segment record contains the appropriate codes for both sides of a street between two nodes. By uniquely identifying each segment (including segments that are not along streets) and each node point, and their geographic relationships, a geographic description which can be checked by computer for accuracy is made possible.

The GBF/DIME concept also serves a further and equally important function. By digitizing the node points (that is, assigning x-y coordinates), graphic outputs either in the form of geographic data displays or map images can be produced by applying computer mapping techniques.

The construction of a GBF/DIME file involves the transcription by local agencies of geographic information (i.e., street patterns, address ranges, area identifiers) from metropolitan maps and other sources into a form that can be read and manipulated by computer. Clerks enter the various types of geographic information on

Figure 6.—Street Segments and Nodes



worksheets which are then keypunched and entered into the computer. After the computer editing, appropriate correction, and insertion of coordinates, the GBF/DIME file is ready for use.

Essentially the same information is contained in both the ACG and GBF/DIME files: Street name, address ranges, block numbers, tract, place, and other geographic codes. The GBF/DIME file has three additional codes: (1) The left-right orientation code separating the census geographic codes for areas on each side of the street segment, (2) the identification numbers of the node points at each end of the segment, and (3) the x-y coordinates of each node point expressed in State plane coordinates (measured in feet relative to the State plane grid system), latitude and longitude (measured in degrees and ten-thousandths of a degree based on distance from the equator), and map set miles (measured in miles and thousandths of a mile from an arbitrary point at the southwest corner of the Metropolitan Map Series sheets.) The GBF/DIME file also contains block boundaries that do not follow streets; these are not contained in the ACG's. (See figure 7 for an example of a GBF/DIME file record.)

Originally, GBF/DIME files were created for 79 of the 88 nonmail SMSA's for use in assigning tract and block numbers to the workplace responses from the place of work question on the 1970 census questionnaire. The Census Bureau and other Federal and local agencies recognized that it would be desirable to add the GBF/DIME features to the already existing ACG's. Each of the 145 SMSA's included in the original ACG program was contacted and invited to participate in the development of a GBF/DIME file; 115 SMSA's agreed to do so. In total, 194 SMSA's (plus part of the San Juan, Puerto Rico

SMSA and the new SMSA of Appleton-Oshkosh, Wis.) participated in the Census Bureau program to develop such files. Of the remaining SMSA's, 32 participated only in the original ACG program and six did not participate in either the ACG or GBF/DIME programs. (See appendix B for a list of SMSA's by their ACG or GBF/DIME status.)

In addition to the geocoding capability described for the ACG's, there are other uses for the GBF/DIME files, as the following examples demonstrate. (1) Since a GBF/DIME file associates coordinates with computerized geographic records, it provides one of the essential elements for computer mapping. Regardless of the computer mapping system being used, spatial identifiers such as the coordinates found in the file are required. (2) A GBF/DIME file can be used in street network analysis. Street networks of varying degrees of detail are required for computerized study and design of routes for garbage trucks, ambulances, and other service vehicles. (3) Computer programs that are

designed to allocate resources to facilities can also take advantage of a GBF/DIME file. For example, the file can be used in allocating people to community fallout shelters or children to schools, determining logical service areas for community health facilities, and evaluating alternative sites for new retail outlets.

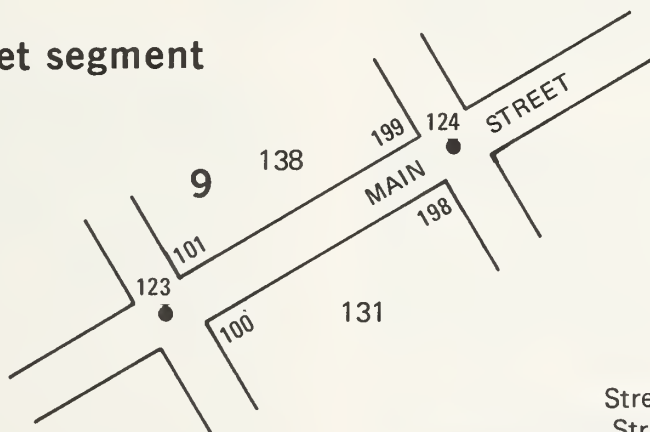
The GBF/DIME files are available on computer tape (IBM-compatible format) at \$70 per tape reel, with most areas on one or two reels. These tape reels can be purchased from the Data User Services Office, Bureau of the Census. Printed listings of the files can also be obtained on a cost reimbursable basis--the cost is normally two to three times that for tape versions.

The CUE Program for GBF/DIME File Management

The GBF/DIME files contain a large amount of geographic information. Unfortunately, they

Figure 7.—GBF/DIME File Record

For each street segment



A GBF/DIME record contains

Street Name	MAIN
Street Type	ST
Lt Addresses	101-199
Rt Addresses	100-198
Left Block	138
Left Tract	9
Right Block	131
Right Tract	9
Low Node	123
X-Y coordinate	155000
	232000
High Node	124
X-Y coordinate	156000
	234000

have some errors in them and like the associated source maps (Metropolitan Map Series) from which the files were constructed, they are becoming out of date. Both of these products reflect local urban geography as it existed immediately prior to the 1970 census. To be of most use to local agencies and the Census Bureau, the files and appropriate maps must be updated as well as corrected. To accomplish this, the Bureau has established the CUE program, referring to the Correction, Update, and Extension of the GBF/DIME file.

The purposes of the CUE program are as follows:

1. To make corrections as necessary to produce a complete and accurate GBF/DIME file and Metropolitan Map Series (MMS) for the SMSA's having an existing file.
2. To extend the GBF/DIME files and MMS to cover the entire SMSA. (At present only the urban core of SMSA's are covered.)
3. To establish GBF/DIME files and MMS for those SMSA's where GBF/DIME files and MMS do not currently exist.
4. To develop procedures by which each SMSA can systematically maintain current and accurate GBF/DIME files and MMS series.

Parts of the CUE program are now operational and many local agencies are beginning to correct and update their GBF/DIME files using computer programs developed by the Census Bureau. (See p.14 for descriptions of the FIXDIME and UPDIME computer programs.) Further information on the CUE program can be obtained from the Geography Division, Bureau of the Census, Washington, D.C. 20233.

COMPUTER PROGRAMS FOR GEOGRAPHIC APPLICATIONS

In addition to the 1970 census geographic reference materials previously described, a number of computer programs for geographic applications, most of which pertain to effective use of the geographic base (DIME) files, are available from the Bureau of the Census. Descriptions of these computer programs are presented in this section. Figure 8 shows the relationship between many of these programs. The FIXDIME and UPDIME programs are not shown in figure 8 because they represent a different stage of application.

All of these computer programs are available from the Data User Services Office, Bureau of the Census, Washington, D.C. 20233. Unless otherwise stated, the programs are sold on computer tape for \$70.

DIME (Dual Independent Map Encoding).-- DIME is a computer program package designed to aid local users in the creation of GBF/DIME files for nonmetropolitan cities. The package consists of a clerical procedures manual and a set of computer programs for file creation.

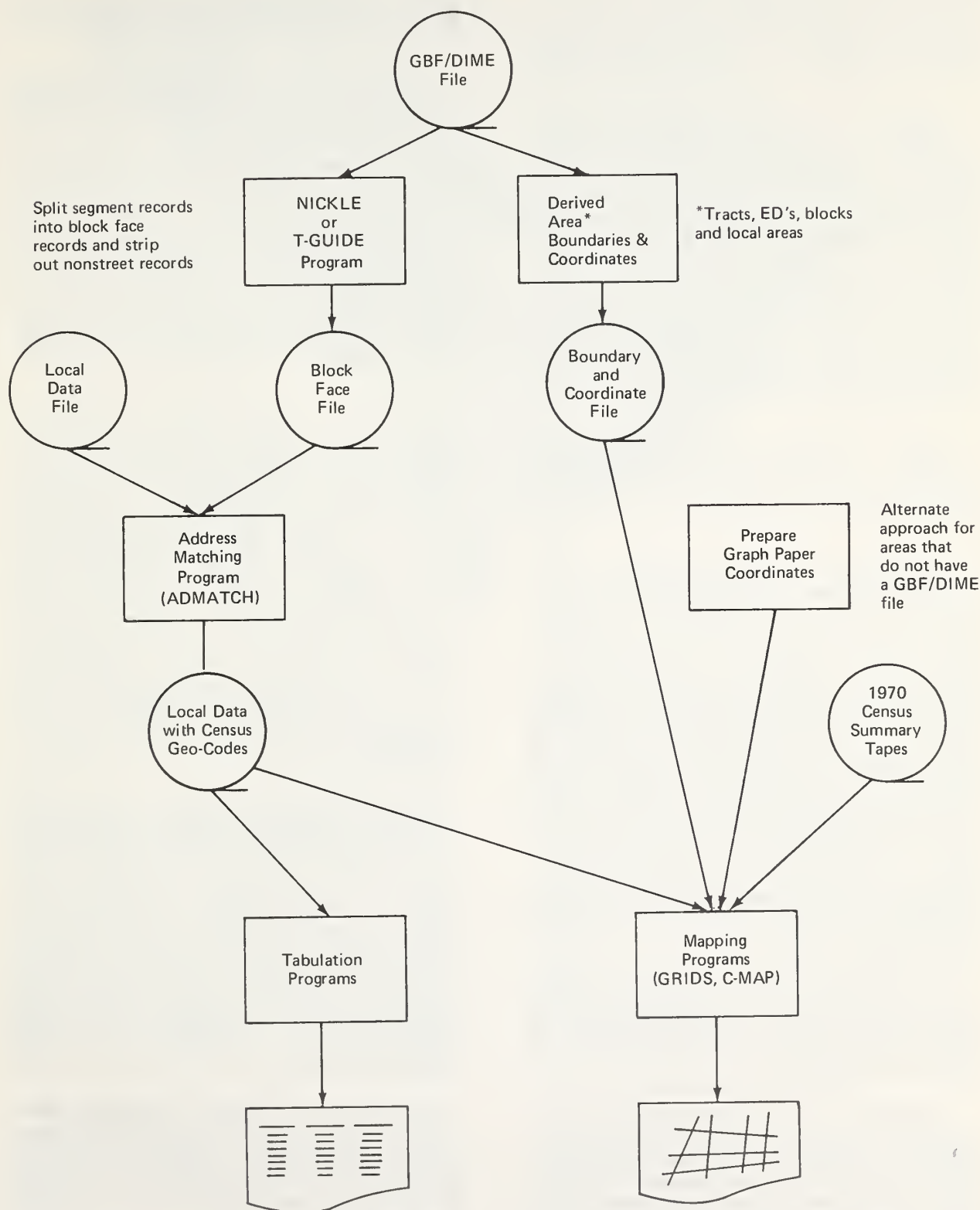
The manual supplies complete information on the clerical coding operation including personnel and space requirements, materials, training and supervising of coders, coding procedures, and problem resolutions. The set of computer programs converts the coded data to a master file for machine use, validates the completeness and accuracy of the clerical work, modifies the master file to correct errors and omissions, and inserts coordinates into the file.

The programs are written in ANSI standard FORTRAN IV for users of almost any computer system with a minimum core storage of 100K bytes.

ADMATCH (Address Matching).-- ADMATCH is a package of computer programs and documentation designed to assist in the assignment of geographic codes to computerized data records containing street addresses. Geographic codes for areas such as census tracts and blocks can be readily assigned to records in local data files using ADMATCH. ADMATCH compares the individual street addresses of local data files to the address ranges in the ACG or GBF/DIME records and upon a match, attaches the desired geographic codes contained in these files to the local data records. Local data records on crime incidents, school dropouts, new construction, or other matters can then be aggregated to census geographic areas for study in relation to the census data available for these areas.

Users need not be restricted to studying only census geographic areas. By creating equivalency tables that relate census tracts or blocks to local areas such as health districts, traffic zones, and school districts, the codes for these local areas can be added to an ACG or GBF/DIME file. Then ADMATCH can be used to assign these local area codes to records in local files in the same manner that it assigns census geographic codes.

Figure 8.—Relationship of Computer-Programs for Geographic Applications



The ADMATCH program package is written in IBM System/360 Assembler Language. Separate versions are available for use under 16K Disk or Tape Operating Systems (DOS or TOS) and under the Operating System (OS). The minimum core storage requirement is 32K bytes, and a line printer and three magnetic tape or disk units are needed.

NICKLE.--The NICKLE program is designed to split the street segment records of the GBF/DIME file into block face records. (To use ADMATCH or any other type of computer matching program, individual block face records rather than street segment records are required.) The program reads the GBF/DIME file, drops the nonstreet records, and then splits the segment records, thus creating a record for each side of the street (block face) much like records in the Address Coding Guide. The block face records may then be used for input to the ADMATCH program.

NICKLE is written for the IBM 360/40 (DOS) in COBOL. A program listing and record layout for the resulting NICKLE file can be obtained at no cost.

T-GUIDE.--The T-GUIDE program was developed to produce a street index at the census tract level from a GBF/DIME file. The index produced from applying T-GUIDE consists of all streets within each census tract included in the GBF/DIME file, indicating low and high address ranges for each side of the street. The program reads the file, drops all nonstreet records (such as railroad tracts, streams, etc.), splits the street segment records, thus creating a record for each side of the block, and then collapses the address ranges of the block side record along the length of the street within each census tract. This results in an approximate 60-percent reduction in the size of the GBF/DIME files and thereby allows for manual, as well as speedier mechanical, geocoding of census tracts to local data records.

The T-GUIDE program is written for the IBM 360/40 (DOS) in COBOL. A program listing and record layout for the resulting T-GUIDE file can be obtained at no cost.

FIXDIME.--The FIXDIME program was developed in conjunction with the Bureau's CUE program. FIXDIME enables local agencies to perform correction operations upon GBF/DIME files. The program deletes erroneous records, makes corrections in existing records, and adds

new records. All items in the files, with the exception of coordinate values, may be corrected.

The FIXDIME program is written in COBOL Level D for the IBM 360 system under DOS.

UPDIME.--Once the GBF/DIME files have been corrected using FIXDIME, the updating process of the CUE program can begin. As with the correction process, updating the files can only be carried out by the local agencies. To assist the local agencies in this effort, the Bureau has prepared a FORTRAN IV program called UPDIME. UPDIME makes possible the addition of new street segments to the file as well as the x-y coordinates for the new segments. It also contains a block chaining edit which detects the structural defects (e.g., missing street segments) in the GBF/DIME file. The UPDIME program is expected to be available in mid-1974.

GRIDS.--The Grid Related Information Display System (GRIDS) is a generalized computer graphics system capable of performing a wide variety of mapping tasks. It produces density, shading, and value maps within a grid pattern. A routine supplied with the system allows GBF/DIME file street networks to be printed displaying segments, city and census tract boundaries, and nodes. GRIDS is written in ASA Basic FORTRAN IV and will run on any computer system with a suitable FORTRAN compiler and sufficient storage, regardless of computer word size or operating system. GRIDS will operate on a machine as small as an IBM System/360 Model 30 computer with 32K bytes of storage.

C-MAP (Choropleth Mapping).--C-MAP is a simplified FORTRAN computer mapping program distributed by the Census Bureau to users who have small computers. Data for geographic areas (i.e., States, counties, census tracts) are printed on the map according to a classification of their statistical values. The user specifies the number and limits of the statistical classes and their perspective printer characters. Shading is achieved by overprinting two or more printer characters. (See figure 9 for a sample choropleth map.)

Punchcards are presently the input medium; however, the program can be modified for computer tape or disk input. A program listing and the procedures for preparing the necessary punchcards for the input process are available at no cost.

Figure 9.—Sample Choropleth Map



REFERENCE MATERIALS

Several series of publications issued by the Bureau of the Census provide additional information on the Bureau's geographic programs and activities and keep data users informed of new developments, applications, and products. These publication series are described below.

The results of extensive research conducted by the Bureau's Census Use Study are presented in a series of reports covering such topics as geographic base (DIME) file development, computer mapping, and address matching. An order form listing the various Census Use Study report topics can be obtained from the Publications Distribution Section, Social and Economic Statistics Administration, Washington, D.C. 20233.

The publication series GE-40, *Census Tract Papers*, makes available to all census data users the papers presented at the Census Tract Conferences held periodically to discuss the problems and uses of census tract and related small-area data. Another series of publications, the GE-60 series, *Computerized Geographic*

Coding, presents the proceedings of several conferences which were devoted to the local uses of ACG and GBF/DIME files. This series provides insight as to what local agencies are doing or plan to do with their files. Order forms for both publication series are available from the Publications Distribution Section.

The *1970 Census Users' Guide* is a two-part general reference manual. Part I contains information on census content, data products, geographic materials, and uses, as well as a dictionary of census terms and a comparison of printed reports and summary tapes. Part II contains information specifically relating to the use of summary tapes. The Guide can be purchased from the U.S. Government Printing Office at the following prices: Part I, \$2.10; Part II, \$3.70; Parts I and II, \$5.80.

The monthly newsletter, *Small-Area Data Notes*, highlights Bureau of the Census activities, products, and services in the field of small-area census data. It provides information on new publications, the release of data in both printed reports and summary tapes, upcoming surveys

and censuses, developments in census geography, and local applications of census data. *Small-Area Data Notes* is available as part of a subscription package with *Data Access Descriptions* for \$5.50 per year. Orders should be sent to the Publications Distribution Section.

ACQUISITION OF GEOGRAPHIC REFERENCE PRODUCTS AND COMPUTER PROGRAMS

Information on how to acquire the geographic reference products, computer programs, and reference materials discussed in this Data Access Description is included in the descriptions of these materials within the text. All geographic products contained on computer tape sell for \$70 per reel. This price is based on the

cost of reproducing copies, plus the cost of the tape reels, the technical documentation, and the shipping and handling charges.

FURTHER INFORMATION

If further information is desired concerning the matters presented in this publication, address inquiries to:

Director
Bureau of the Census
Washington, D.C. 20233

(Please refer to *Data Access Description* No. 33, Census Geography Series, CG-3.)

APPENDIXES

APPENDIX A

CENSUS GEOGRAPHIC AREAS

This Appendix describes the various geographic areas and associated codes contained in the 1970 census tabulations.

States--States are the major political units of the United States. The State codes are 2-digit numbers assigned to the alphabetically arranged 50 States and the District of Columbia.

Counties--Counties are the primary political and administrative divisions of the States. The only major exceptions are Louisiana, where the divisions are called parishes, and Alaska where 29 census divisions have been created as county equivalents for statistical purposes. There are a number of cities which are independent of any county organization and, because they constitute primary divisions within their States, are accorded the same treatment as counties in the preparation of census tabulations. (NOTE: The District of Columbia and the independent cities within the States of Maryland, Missouri, Nevada, and Virginia are all identified as county equivalents.) A total of 3,141 counties and county equivalents were recognized in the 1970 census. A 3-digit numeric code, unique within a State, has been assigned to each of these counties and county equivalents according to their alphabetic sequence.

Minor Civil Divisions (MCD's)--These are primary political and administrative subdivisions of counties in 29 States. The most common type of MCD is the township but there are also towns, precincts, magisterial districts, gores, etc. In the 1970 census there were 28,130 minor civil divisions. Each MCD is assigned a 3-digit numeric code according to the alphabetic sequence of these units within the county. The MCD codes are designated uniquely within county.

Census County Divisions (CCD's)--These are statistical subdivisions of counties in 21 States where minor civil divisions are not suitable for presenting census data. In these States the MCD's are either too small, have lost nearly all meaning locally, or have frequent boundary changes. Over 7,000 CCD's have been established as relatively permanent statistical areas by the Bureau of the Census in cooperation with State and local authorities. CCD's, like MCD's, are assigned unique

3-digit numeric codes according to their alphabetic sequence within the county. The States containing CCD's are: Alabama, Arizona, California, Colorado, Delaware, Florida, Georgia, Hawaii, Idaho, Kentucky, Montana, New Mexico, North Dakota, Oklahoma, Oregon, South Carolina, Tennessee, Texas, Utah, Washington, and Wyoming.

Places--There are two types of places recognized in census tabulations--incorporated and unincorporated. Incorporated places are political units incorporated as cities, towns, villages, or boroughs, regardless of size, with the following exceptions: Towns in New England, New York, and Wisconsin and the boroughs in Alaska are not recognized as places; rather, they are considered to be MCD's. Most incorporated places are subdivisions of minor civil divisions (or census county divisions). Some incorporated places, however, are coextensive with their MCD's or CCD's, while others cross MCD and county lines. In 1970, incorporated places numbered approximately 18,700.

Unincorporated places are closely settled population centers without legally defined corporate limits and having a population of at least 1,000. Each has a definite residential nucleus, and boundaries are drawn by the Bureau of the Census to include, insofar as possible, all the densely settled area. Most of these places were established by State agencies or local census tract committees in cooperation with the Bureau. Over 2,100 unincorporated places were recognized for the 1970 census.

A 4-digit numeric code has been assigned to identify each incorporated and unincorporated place uniquely within each State according to alphabetic sequence. For purposes of classification, places are also assigned place description and place size codes. The place description code is a 1-digit number which describes each type of place on the summary tapes. The codes are: 1 - central city of a standard metropolitan statistical area only, 2 - central city of an urbanized area only, 3 - central city of an SMSA and an urbanized area, 4 - other incorporated place, 5 - unincorporated place, and 7 - not a place (i.e., land area not classifiable in any of groups 1 through 5). Code 6 is not used. The place size code is a 2-digit number which identifies the size group (of 16 groups) of a place based on the

1970 census population count. The size codes are:

00	under 200
01	200 to 499
02	500 to 999
03	1,000 to 1,499
04	1,500 to 1,999
05	2,000 to 2,499
06	2,500 to 4,999
07	5,000 to 9,999
08	10,000 to 19,999
09	20,000 to 24,999
10	25,000 to 49,999
11	50,000 to 99,999
12	100,000 to 249,999
13	250,000 to 499,999
14	500,000 to 999,999
15	1,000,000 or more

Wards--Wards are political subdivisions of many cities and other incorporated places used for voting and representation purposes. Population totals for nearly 4,500 wards have been published for cities with 10,000 or more persons. Each ward is assigned a 2-digit code number uniquely within the city. Usually the ward code is the same as the ward number by which it is identified for local purposes.

Congressional Districts--These political areas are defined by State legislatures or the courts for the purpose of electing congressmen to the U.S. House of Representatives and are subject to change based on population census counts. Forty-one States revised their congressional district boundaries in 1971 and 1972 as a result of the 1970 census. The number of congressional districts is fixed by law at 435. A 2-digit numeric code, which corresponds to the congressional district number assigned in State legislation, is used to identify these areas.

Standard Metropolitan Statistical Areas (SMSA's)--As reported in the 1970 census, standard metropolitan statistical areas consist of a county or group of contiguous counties (except in the New England States) containing at least one city of 50,000 inhabitants or more, or "twin cities" with a combined population of at least 50,000. In addition to the county(s) containing the central city(s), contiguous counties are included in an SMSA if, according to certain criteria, they are metropolitan in character and are socially and economically integrated with the central city. There is no limit to the number of contiguous counties included in the SMSA as long as they are integrated with

the central city; nor is an SMSA limited to a single State--boundaries may cross State lines.

In the New England States, SMSA's consist of groups of towns and cities instead of counties. The title of an SMSA identifies the central city or cities. SMSA's are defined by the Office of Management and Budget.

The 1970 census data were tabulated for a total of 247 SMSA's. A 4-digit numeric code is assigned to each SMSA. The sequence of these codes reflects the alphabetic sequence of all SMSA's in the country. A map of the United States delineating SMSA's recognized in the 1970 census appears at the end of this appendix. NOTE: Additional SMSA's were created during the period of 1971-1973; the total number is presently 267.

Urbanized Areas--An urbanized area consists of a central city (or "twin cities") of 50,000 inhabitants or more plus the surrounding closely settled incorporated and unincorporated areas which meet specific criteria of population size or density. Urbanized areas differ from SMSA's in that rural portions of the counties composing an SMSA are excluded, as are those places which are urban in nature but separated by rural territory from the densely populated area surrounding the central city. There is generally one urbanized area in each SMSA. Because urbanized areas are defined on the basis of the population distribution at the time of a census, their boundaries tend to change in each census. There are 252 urbanized areas defined in the 1970 census. A 4-digit numeric code is assigned to each urbanized area in the country. With a few exceptions, each urbanized area is identical in name and code with the SMSA with which it is associated.

ZIP Code Areas--These are special areas that have been established by the U.S. Postal Service to facilitate the delivery of mail. ZIP code areas do not coincide with census areas and change according to postal requirements. Their boundaries do not necessarily follow clearly identifiable physical features. Since ZIP code areas were developed within the last decade, the 1970 census is the first census to provide data for these areas. ZIP code areas are identified by 5-digit codes. The first three digits indicate a major city or sectional distribution center; the last two digits signify a specific post office's delivery area within the

center. There are 788 3-digit areas and about 39,000 5-digit areas in the United States.

Census Tracts--Tracts are statistical subdivisions most of which are within SMSA's. There are also tracts in a limited number of areas outside of SMSA's. Tract boundaries are determined by a local committee, subject to approval by the Bureau of the Census; they do not cross county lines. Tracts were designed initially to be relatively homogeneous with respect to population characteristics, economic status, and living conditions. The typical tract has about 4,000 to 5,000 residents. All SMSA's recognized at the time of the 1970 census were completely tracted and include about 32,400 tracts. Over 100 counties, cities, or parts of counties outside SMSA's are also tracted and include about 2,300 census tracts. Each tract is identified by a 6-digit number which also serves as the tract code. The first four digits identify the basic tract number. Generally, the last two digits are used to identify two or more tracts formed from what was originally a single tract. The census tract code is always unique within county, usually unique within SMSA, and in a few instances, unique within State.

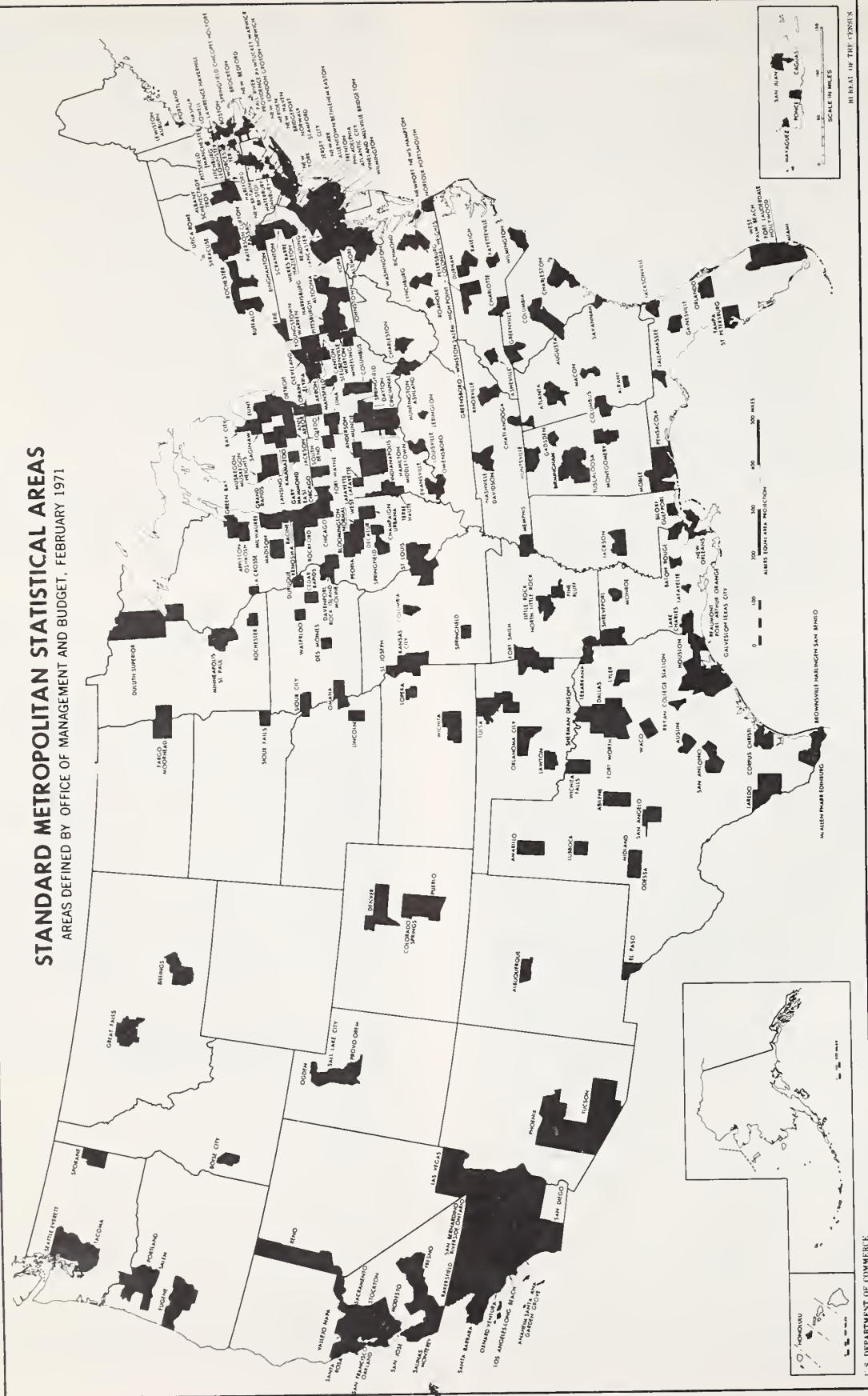
Enumeration Districts (ED's)--These are small areas defined by the Census Bureau, which have an average population of about 800. ED's are newly defined with each census for use as administrative units in the control of census operations. They never cross the boundary of a city, township, or other area (except city blocks) for which census data are tabulated. Some census tabulations are prepared for ED's; in the 1970 census, there are approximately 142,000 ED's for which data have been tabulated. In the larger metropolitan areas, where the census was taken by mail rather than by enumerators, block groups were used as tabulation units in place of ED's. Each ED is assigned a 4-digit code unique within the county. In addition, a one-letter suffix may appear, relating to ED's which have been split.

Block Groups--Block groups are tabulation units, defined by the Census Bureau, which are used only in the census-by-mail areas. The designation "block group" was new in 1970. A block group is a combination of contiguous city blocks and generally has a population of about 1,000. They are subdivisions of census tracts and are defined without regard to the boundaries of political or administrative areas, such as cities or minor civil divisions. Block groups that crossed one or more of these boundaries were split in tabulation and the resulting parts are also tabulated separately. For the purpose of providing small-area census data, block groups are the equivalent of enumeration districts in the built-up portions of the census-by-mail areas. The estimated total number of block groups is 100,000. Each block group is identified by a 1-digit numeric code which is unique within a census tract and is determined by the first digit of the 3-digit block number. For example: Block group "1" would contain any block in range 101-199, block group "2" in range 201-299, etc.

Blocks--Blocks are usually well defined pieces of land bounded by streets or roads. However, they may be irregular in shape and may be partially bounded by railroad tracks, streams, or other nonstreet features. Blocks do not cross census tract boundaries but may cross other boundaries such as city limits. Statistics for blocks are tabulated for all SMSA cities of 50,000 or more (for SMSA's existing at the time of the census) and the urbanized areas of these cities. The Bureau also collected and tabulated data for blocks on a contract basis in over 900 areas outside urbanized areas. (For a list of these contract block areas, see *Data Access Description* No. 15, available on request from Data User Services Office. A total of approximately 1,700,000 blocks were identified for the 1970 census tabulations. A 3-digit numeric code is assigned to each block; this code is unique within census tract.

STANDARD METROPOLITAN STATISTICAL AREAS

AREAS DEFINED BY OFFICE OF MANAGEMENT AND BUDGET, FEBRUARY 1971



APPENDIX B

LIST OF AREAS WITH ACG OR GBF/DIME FILES

The following list is presented by SMSA name and shows, by means of a code identification whether the area has an ACG or GBF/DIME file. Included in the list are those SMSA's which do not have either file. The codes are as follows:¹

Code	Status
1	SMSA has GBF/DIME file
2	SMSA has ACG file
3	SMSA has neither ACG nor GBF/DIME file.

CODE	SMSA TITLE
1	Abilene, Tex.
1	Akron, Ohio
1	Albany, Ga.
2	Albany-Schenectady-Troy, N.Y.
1	Albuquerque, N. Mex.
1	Allentown-Bethlehem-Easton, Pa.-N.J.
1	Altoona, Pa.
1	Amarillo, Tex.
1	Anaheim-Santa Ana-Garden Grove, Calif.
2	Anderson, Ind.
1	Ann Arbor, Mich.
1	Asheville, N.C.
1	Atlanta, Ga.
2	Atlantic City, N.J.
1	Augusta, Ga.-S.C.
1	Austin, Tex.
1	Bakersfield, Calif.
1	Baltimore, Md.
1	Baton Rouge, La.
1	Bay City, Mich.
1	Beaumont-Port Arthur-Orange, Tex.
1	Billings, Mont.
1	Biloxi-Gulfport, Miss.
1	Binghamton, N.Y.-Pa.
1	Birmingham, Ala.
2	Bloomington-Normal, Ill.
1	Boise City, Idaho
1	Boston, Mass.
2	Bridgeport, Conn.
1	Brockton, Mass.

¹The list is based on SMSA's as they existed at the time of the 1970 census (April 1, 1970). The area of Appleton-Oshkosh, Wisconsin, which was not an SMSA at the time of the 1970 census, does have a GBF/DIME file. Although not on the list it has since been designated an SMSA.

CODE

SMSA TITLE--Con.

1	Brownsville-Harlingen-San Benito, Tex.
2	Buffalo, N.Y.
1	Canton, Ohio
1	Cedar Rapids, Iowa
1	Champaign-Urbana, Ill.
1	Charleston, S.C.
1	Charleston, W. Va.
1	Charlotte, N.C.
1	Chattanooga, Tenn.-Ga.
1	Chicago, Ill.
1	Cincinnati, Ohio-Ky.-Ind.
1	Cleveland, Ohio
1	Colorado Springs, Colo.
1	Columbia, S.C.
1	Columbus, Ga.-Ala.
1	Columbus, Ohio
1	Corpus Christi, Tex.
1	Dallas, Tex.
1	Davenport-Rock Island-Moline, Iowa-Ill.
1	Dayton, Ohio
2	Decatur, Ill.
1	Denver, Colo.
1	Des Moines, Iowa
1	Detroit, Mich.
1	Dubuque, Iowa
1	Duluth-Superior, Minn.-Wis.
1	Durham, N.C.
1	El Paso, Tex.
1	Erie, Pa.
1	Eugene, Oreg.
1	Evansville, Ind.-Ky.
1	Fall River, Mass.-R.I.
1	Fargo-Moorhead, N. Dak.-Minn.
1	Fayetteville, N.C.
1	Fitchburg-Leominster, Mass.
1	Flint, Mich.
1	Fort Lauderdale-Hollywood, Fla.
1	Fort Smith, Ark.-Okla.
1	Fort Wayne, Ind.
1	Fort Worth, Tex.
1	Fresno, Calif.
1	Gadsden, Ala.
1	Galveston-Texas City, Tex.
1	Gary-Hammond-East Chicago, Ind.
2	Grand Rapids, Mich.
1	Great Falls, Mont.
1	Green Bay, Wis.
2	Greensboro-Winston-Salem-High Point, N.C.
1	Greenville, S.C.
1	Hamilton-Middletown, Ohio
2	Harrisburg, Pa.
1	Hartford, Conn.
1	Honolulu, Hawaii
1	Houston, Tex.
1	Huntington-Ashland, W. Va.-Ky.-Ohio

CODE	SMSA TITLE--Con.
1	Huntsville, Ala.
1	Indianapolis, Ind.
2	Jackson, Mich.
1	Jackson, Miss.
1	Jacksonville, Fla.
2	Jersey City, N.J.
1	Johnstown, Pa.
1	Kalamazoo, Mich.
1	Kansas City, Mo.-Kans.
1	Kenosha, Wis.
1	Knoxville, Tenn.
3	Lafayette, La.
3	Lafayette-West Lafayette, Ind.
3	Lake Charles, La.
2	Lancaster, Pa.
1	Lansing, Mich.
1	Laredo, Tex.
1	Las Vegas, Nev.
1	Lawrence-Haverhill, Mass.-N.H.
1	Lawton, Okla.
1	Lewiston-Auburn, Maine
1	Lexington, Ky.
1	Lima, Ohio
1	Lincoln, Nebr.
1	Little Rock-North Little Rock, Ark.
1	Lorain-Elyria, Ohio
1	Los Angeles-Long Beach, Calif.
1	Louisville, Ky.-Ind.
1	Lowell, Mass.
1	Lubbock, Tex.
1	Lynchburg, Va.
1	Macon, Ga.
1	Madison, Wis.
1	Manchester, N.H.
2	Mansfield, Ohio
3	Mayaguez, P.R.
1	McAllen-Pharr-Edinburg, Tex.
1	Memphis, Tenn.-Ark.
2	Meriden, Conn.
1	Miami, Fla.
1	Midland, Tex.
1	Milwaukee, Wis.
1	Minneapolis-St. Paul, Minn.
1	Mobile, Ala.
1	Monroe, La.
1	Montgomery, Ala.
1	Muncie, Ind.
2	Muskegon-Muskegon Heights, Mich.
2	Nashville, Tenn.
1	New Bedford, Mass.
1	New Britain, Conn.
2	New Haven, Conn.
2	New London-Groton-Norwich, Conn.
1	New Orleans, La.
1 ²	New York, N.Y.

CODE	SMSA TITLE--Con.
2	Newark, N.J.
1	Newport News-Hampton, Va.
2	Norfolk-Portsmouth, Va.
2	Norwalk, Conn.
1	Odessa, Tex.
1	Ogden, Utah
1	Oklahoma City, Okla.
1	Omaha, Nebr.-Iowa
2	Orlando, Fla.
1	Oxnard-Ventura, Calif.
2	Paterson-Clifton-Passaic, N.J.
2	Pensacola, Fla.
1	Peoria, Ill.
1	Philadelphia, Pa.-N.J.
2	Phoenix, Ariz.
1	Pine Bluff, Ark.
1	Pittsburgh, Pa.
1	Pittsfield, Mass.
3	Ponce, P.R.
1	Portland, Maine
1	Portland, Oreg.-Wash.
1	Providence-Pawtucket-Warwick, R.I.-Mass.
1	Provo-Orem, Utah
1	Pueblo, Colo.
1	Racine, Wis.
1	Raleigh, N.C.
1	Reading, Pa.
1	Reno, Nev.
2	Richmond, Va.
1	Roanoke, Va.
1	Rochester, N.Y.
1	Rockford, Ill.
1	Sacramento, Calif.
1	Saginaw, Mich.
1	St. Joseph, Mo.
1	St. Louis, Mo.-Ill.
1	Salem, Oreg.
1	Salinas-Monterey, Calif.
1	Salt Lake City, Utah
1	San Angelo, Tex.
1	San Antonio, Tex.
1 ³	San Bernardino-Riverside-Ontario, Calif.
1	San Diego, Calif.
1	San Francisco-Oakland, Calif.
1	San Jose, Calif.
1	San Juan, P.R.
1	Santa Barbara, Calif.
1	Savannah, Ga.
1	Scranton, Pa.
1	Seattle-Everett, Wash.
1	Sherman-Denison, Tex.
1	Shreveport, La.
1	Sioux City, Iowa-Nebr.
1	Sioux Falls, S. Dak.
1	South Bend, Ind.

²Only Nassau and Suffolk counties have a GBF/DIME file.

³Only San Bernardino County has a GBF/DIME file.

CODE	SMSA TITLE--Con.
1	Spokane, Wash.
2	Springfield, Ill.
1	Springfield, Mo.
1	Springfield, Ohio
1	Springfield-Chicopee-Holyoke, Mass.-Conn.
2	Stamford, Conn.
1	Steubenville-Weirton, Ohio-W. Va.
1	Stockton, Calif.
2	Syracuse, N.Y.
1	Tacoma, Wash.
1	Tallahassee, Fla.
1	Tampa-St. Petersburg, Fla.
1	Terre Haute, Ind.
1	Texarkana, Tex.-Ark.
1	Toledo, Ohio-Mich.
1	Topeka, Kans.
1	Trenton, N.J.
1	Tucson, Ariz.
1	Tulsa, Okla.
1	Tuscaloosa, Ala.

CODE	SMSA TITLE--Con.
1	Tyler, Tex.
1	Utica-Rome, N.Y.
1	Vallejo-Napa, Calif.
2	Vineland-Millville-Bridgeton, N.J.
1	Waco, Tex.
1	Washington, D.C.-Md.-Va.
2	Waterbury, Conn.
1	Waterloo, Iowa
1	West Palm Beach, Fla.
1	Wheeling, W. Va.-Ohio
1	Wichita, Kans.
1	Wichita Falls, Tex.
1	Wilkes-Barre-Hazleton, Pa.
1	Wilmington, Del.-N.J.-Md.
3	Wilmington, N.C.
1	Worcester, Mass.
1	York, Pa.
1	Youngstown-Warren, Ohio

PUBLICATIONS OF DATA ACCESS DESCRIPTIONS

DAD number	Date of issue	Series number	Title	Current status
3	December 1967	CT-1	General Information About Summary Tapes	See No. 18
4	February 1968	PA-1	Policy Governing Access to Census Bureau Unpublished Data and Special Services	See No. 21
6	April 1968	CT-2	First Count Summary Tapes From the 1970 Censuses of Population and Housing	See No. 13
7	July 1968	CEP-1	Items Contained in the 1970 Censuses of Population and Housing	See No. 14
8	August 1969	CT-3	Second Count Summary Tapes From the 1970 Census of Population and Housing	See No. 26
9	August 1969	CT-4	Third Count (Block) Summary Tapes From the 1970 Census of Population and Housing	See No. 25
10	December 1969	CEP-2	Availability of Place of Work Data in the 1970 Census	See No. 20
11	December 1969	CEP-3	Inclusion of Transient Persons in the 1970 Decennial Census	Current
12	December 1969	CG-1	1970 Census Geography	Current
13	March 1970	CT-2(Rev.)	First Count Summary Tapes From the 1970 Census of Population and Housing	Current
14	March 1970	CEP-1(Rev.)	Items Contained in the 1970 Census of Population and Housing	Current
15	April 1970	CG-2	Contract Block Statistics Program	Current
16	April 1970	CT-5	Fourth Count Summary Tapes From the 1970 Census of Population and Housing	See No. 22
17	May 1970	CEP-4	Printed Reports From the 1970 Census of Population and Housing	See No. 27
18	June 1970	CT-1(Rev.)	General Information About Summary Tapes	Current
19	August 1970	CEP-5	Printed Reports From the 1970 Census-- Housing, Volume II	Current
20	November 1970	CEP-2(Rev.)	Availability of Place of Work Data in the 1970 Census	Current
21	December 1970	PA-1(Rev.)	Census Bureau Unpublished Data and Special Services: Policy and Delineation	Current
22	March 1971	CT-5(Rev.)	Fourth Count Summary Tapes From the 1970 Census of Population and Housing	Current
23	March 1971	CT-6	Fifth Count (ZIP Code) Summary Tapes From the 1970 Census of Population and Housing	Current
24	May 1971	CT-8	Public Use Samples of Basic Records From the 1960 and 1970 Censuses	Current
25	July 1971	CT-4(Rev.)	Third Count (Block) Summary Tapes From the 1970 Census of Population and Housing	Current
26	December 1971	CT-3(Rev.)	Second Count Summary Tapes From the 1970 Census of Population and Housing	Current
27	January 1972	CEP-4(Rev.)	Printed Reports From the 1970 Census of Population and Housing	Current
28	May 1972	CEP-6	Delineation of Problem Housing Areas	Current
29	May 1972	CEP-7	Low-Income Data From the 1970 Census	Current
30	August 1972	CT-7	Sixth Count Summary Tapes From the 1970 Census of Population and Housing	Current
31	November 1972	ECPR-1	Printed Reports Issued by the Bureau of the Census for the Economic, Governments, and Agriculture Censuses	Current
32	May 1973	CEP-8	Subject Reports From the 1970 Census of Population and Housing	Current
33	July 1973	CG-3	1970 Census Geography: Concepts, Products, and Programs	Current

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